When all these curves are compared among themselves, the general relations of the magnetic and meteorological forces can be defined. The data of the horizontal component, shown in curve No. 1, Chart V, is that which evaluates the changes in the intensity of the resultant of the combined terrestrial and solar magnetic fields. Now, according to my conception of the fundamental phenomena, these changes are due to certain equivalent solar impressed forces, which I call polar and equatorial radiations, and which are equal to the residuals given in curve No. 1, on Chart V, but with *reversed sign*. Hence we have the law that an *increase in the intensity of the solar* magnetic output, approaching the earth from the north to the south side of the ecliptic, corresponds (1) to an *increase in the march of the watch rate*, the magnetic field being stronger; (2) to an *increase in the barometric pressure of the atmosphere*, especially in the arctic and the subtropical magnetic belts; and (3) to a *decrease in the temperature* of the same regions. That is to say, years or seasons of *increased solar output give higher arctic pressures and lower temperatures*. Extending this backward to geological periods, the Glacial epochs corresponded to increased solar action, which lowered the temperature in the arctic regions. These become, therefore, measures of the longest solar period known to us.

In current meteorological phenomena, "highs" seem to be built upon the west Canadian plains by an increase in the intensity of the sun's polar magnetic field. They are then caught up in the earth's convectional system and transported eastward in the northern or the southern circuits. The running down of these highs, under gravitation, produces a system of lows, with cyclonic movements, on their periphery, or between two adjacent highs with counterflowing currents in the lower strata of air. Similar functions may, to a much smaller extent, be attributed to the tropical highs, but the agency of the solar equatorial field obscures this operation, except, perhaps, in the case of hurricanes, considered as a phenomenon embracing many years. In order to successfully trace these functions throughout the globe, our knowledge must be much increased. Even in the northwest, where the operation of the polar field is pronounced, the intermingling of the effects of the polar and equatorial radiations causes much looseness of synchronism. The intermittent nature of the rate of the eastward drift is the chief factor in that irregularity, but even so, by paying attention to the minor curvatures, it is easily discovered that such a system of forces as described is constantly at work upon the atmospheric elements. A close detailed comparison of the temperatures and pressures of the northwest, as given on the daily weather map, extended over several years, not only confirms the accuracy of the adopted period of solar rotation, but also the view that has been explained as our working hypothesis.

## CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts in regard to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

*Alabama.*—The most noticeable characteristics of the climatic conditions for the month were a very general and severe cold wave from the 3d to 6th, which spread over the entire State, giving freezing temperature as far south as the Gulf Coast. The mean temperature was 44.1°, or 1.2° above the normal. The highest, 78°, was recorded at Tuscaloosa on the 31st, and the lowest, 9°, at Decatur on the 4th. The average precipitation was 4.25, or 1.11 less than normal. The greatest monthly amount was 8.71, at Healing Springs, and the least, 1.77, at Daphne.

*Arizona.*—The mean temperature was 47.7°, or about 8° above normal. The highest, 90°, at Maricopa, and the lowest, 4°, at Flagstaff. The average precipitation was 0.55, or about 0.44 below normal. The greatest amount was 2.00,at Reymert, and the least, 0.00, at San Simon and Texas Hill.

*Arkansas.*—The mean temperature was 41.4°, or 3.2° above normal. The highest was 78°, at Elon on the 31st, and the lowest, 4°, at La Crosse on the 4th. The average precipitation was 4.09, or normal. The heaviest falls were reported from the central parts of the State, and the lightest were generally in the extreme northern portion. The greatest amount was 6.94 at Camden, and the least, 1.32, at Dardanelle. There were about 50 per cent more cloudy days than usual.

*California.*—The mean temperature was 50°, or 4.4° above normal. The highest was 112°, at Salton, in the desert region, on the 21st, and the lowest, 8° below zero, at Boca on the 22d. The average precipitation was 8.45, or 3.93 above normal. The greatest monthly amount was 45.17, at Lagunitas, 6 miles from San Rafael, Marin County, and the least, "trace," at Barstow, in the desert region of San Bernardino County.

*Colorado.*—The month was unusually warm over the entire State. Comparison with the normal shows that there was an average excess of about 5° daily in the western counties and the San Luis Valley, and from 7° to 10° over the mountain districts and the eastern Slope. The highest temperature was 75°, at Downing on the 5th, and near Crook, Logan County, on the 19th; the lowest, 24° below zero, at Gunnison on the 5th. The average precipitation was 0.81, or 0.12 below normal. The greatest monthly amount was 7.69, at Ruby, Gunnison County, and the least, "trace," at Byers, Arapahoe County.

*Florida.*—The mean temperature was 56.5°, or 4.5° below normal. The highest was 93°, at Tampa on the 30th, and the lowest, 20°, at Milton on the 5th. The average precipitation was 3.96, or 0.55 above normal. The greatest monthly amount was 8.01, at New Smyrna, and the least, 0.45, at Lemon City. Several severe cold waves passed over the State; the most severe one reached the State on the night of the 4th, and its influence was felt on the 7th as far south as Jupiter.

*Georgia.*—The mean temperature was 44.4°, or about 1.0° above normal. The highest was 75°, at Poulan on the 30th, and the lowest, 5°, at Diamond on the 4th. The average precipitation was 4.11, or about 0.75 less than the normal. The greatest monthly amount was 6.47, at Whitesburg, and the least, 2.77, at Ramsey. The month was generally mild and pleasant.

*Idaho.*—The mean temperature was 27.6°. The highest temperature was 62°, at Lewiston on the 27th, and the lowest, 25° below zero, at Junction on the 13th. The first half of the month the usual January weather as regards temperature prevailed, but with the 15th came a succession of chinook * winds which raised the temperature above normal and gave everything a spring-like appearance; in many places plowing was begun. The mean daily temperature for the last two weeks was 12° higher than that of the first half. The average precipitation was 2.92; the greatest amount was 7.85, at Soldier, and the least, 0.07, at Junction. From the 14th to the 21st rainfall was general and greatly above normal. Mr. Frank Adams, observer at Salubria, says: "For several days this month this section was visited by the heaviest and most constant downpours of rain that have ever occurred within the memory of the oldest inhabitant of this valley; travel of all kinds was suspended for 48 hours. The heavy rise of water on the 20th caused the low lands to be about five feet under water, doing considerable damage, washing out six reservoirs and three bridges, and spoiling a considerable amount of hay throughout this section of the country."

*[NOTE.—The word "chinook" is now used in Idaho to designate any warm wind, including warm southwest rain winds; but such usage is contrary to meteorological authority, and will not be adopted in the MONTHLY WEATHER REVIEW. An indiscriminate use of this word has also sprung up in the Mississippi Valley. The technical usage of professional meteorology is the only one that can be allowed in the MONTHLY WEATHER REVIEW. For the present, therefore, the term "chinook" will only be applied to those winds that can be distinctly proven to be warm, dry, descending winds, and as the term "fœhn" has not yet been misapplied by American newspaper usage, that word will be preferred. We can not have an exact science of meteorology unless our words have an exact signification and are used with precision.—C. A.]

*Iowa.*—The mean temperature was 23.4°, or 7° above normal. The highest was 68°, at Neola on the 10th, and the lowest 20° below zero, at Cresco on the 4th. The average precipitation was 0.48, or 0.90 below normal. The greatest monthly amount, 2.10, occurred at Seymour, and the least, "trace," at Denison and Rock Rapids.

*Illinois.*—Excepting the very short sharp cold wave of the 3d to 5th, and the slight cold period from the 12th to 14th, principally in north and northwest counties, the month was uniformly warm, averaging 6.2° above normal. The minimum was 15° below zero, at Ashton on the morning of the 4th, and the maximum, 61°, at Cairo and Mt. Vernon on the 30th. Rainfall was largely lacking up to the 21st, when a rain period of four days gave most of the rain for the month; this, with the rainfall on the 31st, comprised the rain periods. The average fall was 1.16, or 1.09 below normal, and the lowest which has been recorded since 1878. The northern section was especially lacking in precipitation, the snowstorms being very light and few. The least precipitation reported was 0.43 at Morrisonville, and the greatest, 3.54, at Greenville, about 30 miles south of the former. The average snowfall was 1.1 inch; most of the snow, however, fell in the northern sections in two light storms. The amount of snow on the ground was very small at the beginning of the month, and on the 15th there was but a trace in the northeast country, while the month ended with bare ground, practically free from frost and very muddy.

*Indiana.*—The mean temperature, 29.8°, was 3.6° above normal. The highest temperature, 60°, was reported from Evansville on the 30th, and at Edwardsville on the 31st, and the lowest, 14° below zero, at Tipton on the 4th. The average precipitation, 1.26, was 1.68 below normal. The greatest monthly amount, 2.68, occurred at Hammond, and the least, 0.55, at Vincennes.

*Kansas.*—The mean temperature was 34.2°, or 6.3° above normal. The highest temperature was 77°, at Goodland on the 20th, and the lowest, 18° below zero, at Wallace on the 3d. The precipitation was 0.19 below the average. The greatest monthly amount, 1.45, occurred at Coldwater, and the least, 0.16, at Wallace. The month was one of the cloudiest and foggiest Januaries on record.

*Kentucky.*—The mean temperature was 36.1°, or 2.1° above normal. The highest was 74°, at Alpha on the 31st, and the lowest, 3° below zero, at Caddo on the 4th. The average precipitation was 1.25, or 2.73 less than normal. The greatest amount was 2.51, at Canton, and the least, 0.15, at Greensburg. The month was generally damp and gloomy on account of the large excess of cloudiness and frequent fogs.

*Louisiana.*—The mean temperature was 49.4°, or 1.5° below normal. The highest was 83°, at Lawrence on the 31st, and the lowest, 14°, at Oxford on the 5th. The average precipitation was 3.21, or 1.25 less than normal. The greatest monthly amount was 8.71, at Trinity, and the least, 1.16, at Melville.

*Maryland.*—The mean temperature was 31.9°, or normal. The highest was 66°, at Boettcherville on the 30th, and the lowest, 13° below zero, at Deer Park on the 6th. The average precipitation was 1.80, or 1.46 below normal. The greatest monthly amount was 3.33, at Burkittsville, and the least, 0.90, at Deer Park.

*Michigan.*—The mean temperature was 23.1°, or 2° above normal. The highest was 54°, at Three Rivers, and the lowest, 25° below zero, at Sault Ste. Marie and Boon on the 5th. The average precipitation was 1.40, or 0.96 below the normal. The greatest monthly amount was 3.97, at Sault Ste. Marie, and the least, 0.45, at Flint.

*Minnesota.*—The mean temperature was 12.3°; the highest was 53°, at Pleasant Mounds on the 10th, and the lowest, 48° below zero, at Leech Lake Dam on the 4th. The average precipitation was 0.76, or slightly below normal, but badly distributed. There was an excess in the northern two-thirds of the State, but the deficiency in the southern portion was so great as to reduce the average to less than normal. The greatest monthly amount was 3.35, at Lutsen, and the least, "trace," at Bingham Lake.

*Mississippi.*—The mean temperature was 45.5°, or about normal. The highest was 77°, at Magnolia on the 31st, and the lowest, 10°, at French Camp on the 5th, and Yazoo City on the 4th. The average precipitation was 4.20, or 1.30 below normal. The greatest montly amount was 7.92, at Fayette, and the least, 2.32, at Pearlington.

*Missouri.*—The mean temperature was 32.7°, or 5.6° above normal. The highest was 71°, at Willow Springs on the 9th, and the lowest, 9° below zero, at Unionville on the 3d. The average precipitation was 1.16, or 0.69 below normal. The greatest monthly amount was 3.97, at New Madrid, and the least, 0.27, at Conception. At a very few stations the precipitation was slightly in excess of normal, but, as a rule, it was deficient.

*Montana.*—The mean temperature was 20.0°, or about 9° above normal. The highest was 65°, at Bozeman on the 8th, and the lowest, 41° below zero, at Kipp on the 3d. Some very sudden changes in temperature occurred on the 16th and 17th; at Dillon on the 16th it rose from 6° to 40° in two hours; at Red Lodge on the same date from 21° below zero to 20° above in one hour; at Kipp, on the 17th, from 11° below zero to 21° above in 9 minutes, and at Lewistown, on same date, from 10° to 30° in three hours. The average precipitation was 0.94, or about normal. The greatest monthly amount was 4.04, at Troy, and the least, 0.05, at Manhattan. The month was remarkably mild and pleasant.

*Nebraska.*—The mean temperature was 28.4°, or 9.6° above normal. The highest was 78°, at Brokenbow on the 30th, and the lowest, 20° below zero, at Whitman on the 3d. The average precipitation was 0.37, or 0.31 below normal. The greatest monthly amount was 1.30, at Fort Robinson, and the least, "trace," at several stations.

*Nevada.*—The mean temperature was 33.9°, or 6.7° above normal. The highest was 70°, at Hamilton on the 8th, and the lowest, 26° below zero, at Stofiel on the 13th. The average precipitation was 1.80, or 0.31 above normal. The greatest monthly amount was 10.70 at Lewers Ranch, and the least. 0.06, at Silver Peak.

*New England.*—The mean temperature was 21.5°, or 1.8° below normal. The highest was 50°, at Vineyard Haven on the 3d, and Nantucket on the 24th, and the lowest, 27° below zero, at West Milan on the 7th. The average precipitation was 1.92, or 2.02 below normal. The greatest monthly total was 3.70, at Natick, and the least, 0.31, at Fairfield.

*New Jersey.*—The mean temperature was 28.6°, or 0.9° below normal. The highest was 61°, at Millville on the 24th, and the lowest, 7° below zero, at Somerville on the 6th. The average precipitation was 1.66, or 2.22 below normal. The greatest monthly total was 2.81, at Moorestown, and the least, 0.68, at Belvidere.

*New Mexico.*—This was the warmest January in New Mexico that has been recorded by the Service. The highest temperature was 75°, at Eddy on the 20th, and the lowest, 12° below zero, at Springer on the 1st. The precipitation was considerably below normal. The greatest monthly amount was 1.65, at Chama, and the least, 0.00, at Engle, and "trace" at Fort Union, Gallinas Springs and Los Lunas.

*North Carolina.*—The mean temperature was 38.7, or 1.5° below normal. The highest was 70°, at Oakridge and Marion on the 30th, and the lowest, 2° below zero, at Linville on the 4th. The average precipitation was 2.79, or 1.71 below normal. The greatest monthly amount was 4.74, at Horse Cove, and the least, 1.12, at Rockingham.

*North Dakota.*—The mean temperature was 29.4°, or 2.9° above normal. The highest was 58°, at Fort Yates on the 10th, and the lowest, 42°, below zero, at Gallatin on the 4th. The average precipitation was 0.70, or 0.11 above normal. The greatest monthly amount was 2.02, at Williston, and the least, 0.08, at Portal.

*Ohio.*—The mean temperature was 29.4°, or 2.6° above normal. The highest was 70°, at Defiance and New Waterford on the 30th, and the lowest, 14° below zero, at New Waterford on the 4th. The average precipitation was 1.67, or 1.37 below normal. The greatest monthly amount was 3.40, at Dupont, and the least, 0.20, at Annapolis.

*Oklahoma.*—The mean temperature was 40.3°, or 9.2° above normal. The highest was 79°, at Mangum on the 9th, and the lowest 2° below zero, at Purcell on the 4th. The average precipitation was 1.04, or 0.86 below the Fort Sill normal. The greatest monthly amount was 2.54, at Kemp, and the least, 0.25, at Eufaula.

*Oregon.*—The mean temperature was 40.2°, or 4.2° above normal. The highest was 70°, at Langlois on the 6th, and the lowest, 6° below zero, at Beulah on the 12th. The average precipitation was 8.76, or 2.30 above normal. The greatest monthly amount was 27.12, at Glenora, and the least, 1.05, at Lone Rock.

*Pennsylvania.*—The mean temperature was 27.6°, or 3.4° above normal. The highest was 60°, at Chambersburg and Shinglehouse on the 30th, and the lowest, 15° below zero, at Shinglehouse on the 6th. The average precipitation was 1.43, or 2.13 below normal. The greatest monthly amount was 2.40, at Shinglehouse, and the least, 0.52, at South Eaton.

*South Carolina.*—The mean temperature was 43.8°, or 2.6° below normal. The highest was 72°, at Spartanburg on the 18th, Gillisonville and Little Mountain on the 30th, and Trial on the 31st. The lowest was 9°, at St. Georges on the 5th. The average precipitation was 3.02, or 1.38 below the normal. The greatest monthly amount was 4.54, at Longshore, and the least, 1.51, at Cheraw.

*South Dakota.*—The mean temperature was 18.6°, or 7.6° above normal. The highest was 79°, at Fort Meade on the 21st, and the lowest, 28° below zero, at Ashcroft on the 2d. The average precipitation was 0.34, or 0.17 below normal. The greatest monthly amount was 1.10, at Oelrichs, and the least, "trace," at Highmore, Nowlin, Parkston, and Vermilion. The month as a whole was unusually mild.

*Tennessee.*—The mean temperature was 39.2°, or more than 2° above normal. The highest was 71° at St. Joseph on the 30th and Elizabeth on the 31st; the lowest, 5°, at Bristol and Sewanee on the 3d and Rugby on the 4th. The average precipitation was 2.28, or 2.56 below normal. The greatest monthly amount was 5.85, at Tullahoma, and the least, 0.46, at Elizabeth.

*Texas.*—The temperature, on an average for the State, was 3.5° above normal. The highest was 92°, at Twohig on the 22d, and the lowest, 1°, at Coldwater on the 3d. The precipitation averaged 0.27 above normal. It was in excess in all sections except along the coast. The greatest monthly amount was 15.40, at Marshall, and the least, "trace," at Sierra Blanca.

*Utah.*—The mean temperature was 28.4°, or much above normal; the last half of the month there was an excess of about 15°. The highest was 66°, at St. George on the 21st, and the lowest, 17° below zero, at Fort Duchesne on the 1st. The average precipitation was 0.81 below normal. The greatest amount was 2.45, at Huntsville, and the least, 0.05, at Loa. The average depth of snowfall was 3 inches.

*Virginia.*—The mean temperature was 35.3°, or 1.6° below normal. The highest was 68°, at Birdsnest on the 24th, and the lowest, 4° below zero, at Monterey on the 4th. The average precipitation was 2.20, or 2.18 below normal. The greatest monthly amount was 3.54, at Charlottesville, and the least, 0.75, at Saltville.

*Washington.*—The mean temperature was 36.5°, or 2.2° above normal. The highest was 74°, at Kennewick on the 10th, and the lowest, 6° below zero, at Hunters. The average precipitation was 7.80, or 2.25 above normal. The greatest monthly amount was 26.93, at East Clallam, and the least, 0.35, at Kennewick. The greatest excess occurred in the western part of the State; in the eastern section the excess was very slight.

*West Virginia.*—The mean temperature was 32.3°, or about normal. The highest was 62°, at Bluefield on the 18th, and the lowest, 5° below zero, at Nuttallburg on the 5th. The average precipitation was 1.59, or decidedly below normal. The greatest monthly amount was 2.72, at Weston, and the least, 0.67, at Hewlett.

*Wisconsin.*—The mean temperature was 18.6°, or 4.8° above normal. The highest was 53°, at Meadow Valley on the 29th, and the lowest, 38° below zero, at Butternut, on the 5th. The average precipitation was 0.97, or 0.68 less than normal. The greatest amount was 2.40, at Howard, and the least, 0.40, at Spooner.

*Wyoming.*—The mean temperature was 27°, or about 5° above normal. The highest was 70°, at Embar on the 9th, and the lowest, 25° below zero, at Sheridan on the 3d. The average precipitation was 0.79, or only slightly above normal. The greatest monthly amount was 2.21, at Yellowstone, and the least, 0.24, at Lander.

## SPECIAL CONTRIBUTIONS.

### CLOUD OBSERVATIONS AND AN IMPROVED NEPHOSCOPE.

By C. F. MARVIN, Professor of Meteorology, U. S. Weather Bureau (dated April 15, 1896).

Observations and studies of clouds, their forms, heights, velocities and directions of motion, constitute at present perhaps the most important source of information as to what is going on in the upper atmosphere. Much attention has been concentrated upon the faithful and regular observation of temperature, rainfall, winds, etc., within a few feet of the surface of the earth, but here the influences of local surroundings are always a more or less important factor, whereas the character and behavior of clouds result from the operations of great forces on large masses of the atmosphere, unmodified by important disturbing causes. If thoroughly studied, classified and understood, the cloud phenomena should greatly aid meteorologists in explaining much that is now obscure or unknown concerning the changes of storm and sunshine, wind and calm that constantly succeed one another. Accurate observations of surface conditions have a real importance and value in themselves, and have thus far absorbed practically all the attention, whereas the observation of clouds has generally been accorded a place of secondary importance, and has been conducted in a more or less imperfect manner; in fact, the best class of cloud observations has been made by only a few special students. This subject has been extensively discussed at the several meetings of the International Congress of Meteorologists, and as early as 1891 the matter was placed in the hands of a permanent committee. One result of their labors is shortly to go into effect, namely, an agreement entered into by nearly all the meteorological services of the world to observe and study clouds systematically and according to a uniform scheme at a few selected stations for a period of one year, beginning May 1, 1896.* The observations to be conducted by the Weather Bureau will be made in the most complete and comprehensive manner at Washington, and somewhat less elaborately at other selected stations.

*Elements in cloud observations.*—The following list sets forth the several elements that may be considered in cloud observations:

(1) Kind or name of cloud.

(2) Direction of the cloud from the observer; that is, its azimuth.

(3) The angular elevation of the cloud above the horizon; that is, its angular altitude.

(4) The direction of its motion measured on a horizontal plane; that is, the azimuth of its motion.

(5) The apparent velocity of its motion.

(6) The height of the cloud; that is, the vertical distance of the cloud above the surface of the earth.

*This date has recently been changed to August 1, 1896.—C. A.]

*Cloud forms.*—Clouds take on an infinite variety of forms and structures, but these, nevertheless, may be grouped into some ten or fifteen classes or typical varieties. A systematic classification of this sort has been presented by the International Cloud Committee that is quite generally acceptable to meteorologists, although any such classifications must always be regarded as purely arbitrary and conventional. The general adoption everywhere of one such classification is highly desirable, as it provides a uniform and convenient system of names for clouds of the different kinds, however objectionable any one classification may be in itself. The cloud committee will publish soon a cloud atlas containing plates representing typical cloud forms obtained by selection from large numbers of cloud photographs.

The following table, which gives the mean heights and velocities of the different cloud forms, will be of interest. The data contained therein is the result of a large number of measurements made at the Blue Hill Meteorological Observatory, Massachusetts:

*Mean heights and velocities of clouds grouped into five levels.*

[Annals of the Astronomical Observatory of Harvard College, Vol. XXX, Part III Observations made at Blue Hill Observatory. The velocities are given in meters per second.]

| | Mean height. | | Mean velocity. | |
|---|---|---|---|---|
| | Summer half year. | Winter half year. | Summer half year. | Winter half year. |
| | *Meters.* | *Meters.* | *m.p.s.* | *m.p.s.* |
| Cirrus level | 9.757 | 8.012 | 28.0 | 43.9 |
| Cirro-cumulus level | 8.228 | 5.039 | 24.1 | 40.9 |
| Alto-cumulus level | 4.228 | 3.484 | 11.2 | 20.2 |
| Cumulus level | 1.057 | 1.571 | 8.9 | 13.7 |
| Stratus level | 563 | 454 | 7.2 | 10.2 |

*Mean heights and velocities of the different cloud forms.*

| | | | | |
|---|---|---|---|---|
| Cirrus | 9.923 | 8.051 | 28.5 | 51.0 |
| Cirro-stratus | 8.754 | 7.846 | 24.9 | 38.0 |
| Cirro-cumulus | 7.606 | 6.992 | 22.9 | 50.3 |
| Alto-stratus | 6.481 | 2.930 | 23.3 | 10.0 |
| Alto-cumulus | 3.195 | 2.931 | 9.4 | 21.3 |
| Strato-cumulus | 1.957 | 1.830 | 8.4 | 11.5 |
| Cumulus | 1.473 | 1.381 | 8.7 | 14.3 |
| Cumulo-nimbus | 1.302 | 1.552 | 16.8 | 12.9 |
| Nimbus | 712 | ..... | ..... | ..... |
| Stratus | 583 | 503 | 6.2 | ..... |

The following is the classification recommended by the committee:

Generally each class is divided into two varieties; (*a*), detached or rounded forms which appear chiefly in dry weather, and (*b*), widespread veil-like forms seen more frequently in rainy weather. Five main types are recognized:

A. Highest clouds, mean elevation 9,000 meters.

(*a*) 1. Cirrus, isolated feathery clouds.

(*b*) 2. Cirro-stratus, fine whitish veil.